Appendix L. Final quantitative ranking of 172 vital signs.

Table 1. Final quantitative ranking of 172 vital signs. The overall score is based here on a weighting of .3 for Ecological and Management significance, .2 for relevancy of the vital sign to the monitoring question, and .2 for cost and feasibility. Although ranking scores were developed for legal mandate as shown, they were not used.

Rank of	Monitoring	Avg. of ecol.	Avg. of man.	Avg of ecol. and man.		Relevancy	Legal mandate	Feasibili ty cost	Over all vital sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
	What are the						AA	7	
	trends in distribution								
	and								
	abundance of								
	non-native				non-		,		
1	species through time?	3.43	3.46	3.44	native plants	3.29	3.00	4.00	3.52
1	What are	3.43	3.40	3.44	plants	3.29	3.00	4.00	3.32
	status and				A				
	trends in focal				amphibia				
4	taxa groups? What are	3.38	3.15	3.26	ns	3.16	2.00	4.00	3.39
	status and								
	trends in		A						
	structure,								
	function, and				old				
	composition of focal	<u> </u>			growth				
2	communities?	3.44	3.14	3.29	forest	3.06	4.00	4.00	3.39
	What are	1							
	status and								
	trends in structure,								
	function, and	JV.							
	composition				song bird				
0	of focal	2.44	2.14	2.20	communit	2.02	2.00	4.00	2.20
2	communities? What are	3.44	3.14	3.29	ies	3.03	2.00	4.00	3.38
	status and								
-	trends in								
	structure,								
	function, and composition								
	of focal				Redwood				
2	communities?	3.44	3.14	3.29	forest	2.97	4.00	4.00	3.37
	What are								
	status and trends in				riparian plant				
	structure,				communit				
2	function, and	3.44	3.14	3.29	ies	2.87	2.00	4.00	3.35

				Avo					
				Avg of					Over
		Avg.	Avg.	ecol.					all
		of	of	and			Legal	Feasibili	vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
	composition	Ö	Ü		U				
	of focal								
	communities?								
					keystone				
					plants				
	What are				(e.g.		4		
	status and				Aspen,				
_	trends in focal	2.22	2.20	2.25	whitebark	2.07	1.00	1.00	2.24
5	species?	3.22	3.28	3.25	pine)	2.97	1.00	4.00	3.34
	What are status and							,	
	trends in focal				keystone				
5	species?	3.22	3.28	3.25	mammals	2.91	1.00	4.00	3.33
3	What are	3.22	3.40	3.23	mammais	2.91	1.00	4.00	5.55
	status and					1			
	trends in								
	structure,				1				
	function, and								
	composition				Intertidal				
	of focal				communit				
2	communities?	3.44	3.14	3.29	ies	2.76	2.00	4.00	3.33
	What are								
	status and								
	trends in focal		4		keystone				
5	species?	3.22	3.28	3.25	birds	2.88	1.00	4.00	3.33
	What are								
	status and	A							
	trends in	A .							
	structure, function, and								
	composition	The state of the s			Ponderos				
	of focal				a pine				
2	communities?	3.44	3.14	3.29	forest	2.70	1.00	4.00	3.32
	What are	, 5, , ,		2.27	101000	2., 3	1.00	1.00	2.32
	status and								
	trends in focal				keystone				
5	species?	3.22	3.28	3.25	fish	2.81	1.00	4.00	3.31
	What are								
	status and				fish				
7	trends in focal				assembla				
4	taxa groups?	3.38	3.15	3.26	ges	2.75	2.00	4.00	3.31
	What are								
	status and								
	trends in								
	structure,								
	function, and								
	composition				ahmahla J				
2	of focal communities?	211	211	3.29	shrubland	2.63	2.00	4.00	3 20
	communities?	3.44	3.14	3.29	S	2.03	2.00	4.00	3.30

				Avg					
				of					Over
		Avg.	Avg.	ecol.					all
		of	of	and			Legal	Feasibili	vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
	What are								
	status and				surface				
	trends in				water				
	surface	2.26	2.07	2.16	temperatu	2.00	4.00	4000	2.20
6	waters?	3.26	3.07	3.16	re	3.00	4.00	4.00	3.30
	What are status and						4		
	trends in								
	human						~		
	impacts near								
	sensitive plant							/	
	and animal				human				
	populations				visitation				
8	and habitats?	3.03	3.28	3.15	levels	2.97	2.00	4.00	3.28
	How are						/		
	connectivity,					/			
	fragmentation,				4				
	and level of								
	park								
	"insularity"				No. of the last of	,			
	changing with land use								
	change in and								
	around the		A		land				
10	parks?	3.20	3.00	3.10	cover	3.12	3.00	4.00	3.28
	What are								
	status and		A	y	surface				
	trends in		4200		water				
	surface				contamin				
6	waters?	3.26	3.07	3.16	ants	2.92	4.00	4.00	3.28
	What are								
	status and								
	trends in focal	2 20	2 15	2.26	land binds	2.50	2.00	4.00	2.20
4	taxa groups? What are	3.38	3.15	3.26	land birds	2.59	2.00	4.00	3.28
A	status and								
	trends in focal				water				
4	taxa groups?	3.38	3.15	3.26	birds	2.59	2.00	4.00	3.28
	What are	2.20	2.13	2.20	01140	2.57	2.00	1.00	2.20
	status and								
	trends in				pollutants				
	pollutants				(organic,				
	(chemicals,				including				
	nutrients,				hydrocarb				
	effluents, and	2.0-	0.5-		on fuel,				2.55
9	trash)?	3.08	3.20	3.14	oil)	2.96	4.00	4.00	3.28
	What are				surface				
6	status and	3 26	3.07	2 16	water	200	3.00	4.00	2 27
6	trends in	3.26	3.07	3.16	flow	2.88	5.00	4.00	3.27

				Avg of					Over
		Avg. of	Avg. of	ecol. and			Legal	Feasibili	all vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
	surface								
	waters?								
	What are								
	status and								
,	trends in focal	2.20	2.15	2.2.5	marine	2.55	4.00	4.00	2.25
4	taxa groups?	3.38	3.15	3.26	mammals	2.57	4.00	4.00	3.27
	What are								
	status and						_ (7	
	trends in human								
	impacts near							,	
	sensitive plant								
	and animal				terrestrial				
	populations				vehicle				
8	and habitats?	3.03	3.28	3.15	traffic	2.91	2.00	4.00	3.27
	What are	0.00	2.20	0.10	u u u u u		2.00		0.27
	status and				1				
	trends in								
	structure,								
	function, and				To the state of th				
	composition			A STATE OF THE STA	estuarine	/			
	of focal			4	aquatic				
2	communities?	3.44	3.14	3.29	plants	2.48	2.00	4.00	3.27
	What are		4						
	status and			\ /					
	trends in				surface				
	surface	2.26	2.07	2.16	water	2.05	4.00	4.00	2.27
6	waters?	3.26	3.07	3.16	chemistry	2.85	4.00	4.00	3.27
	What are								
	status and trends in	7							
	structure,								
	function, and	P							
	composition								
	of focal				freshwate				
2	communities?	3.44	3.14	3.29	r plants	2.46	2.00	4.00	3.27
	What are								
	status and								
	trends in focal				land				
4	taxa groups?	3.38	3.15	3.26	mammals	2.52	2.00	4.00	3.26
	What are								
	status and								
	trends in								
	pollutants								
	(chemicals,								
	nutrients,								
	effluents, and	2.00	2.20	2 1 4	pollutants	2.00	4.00	4.00	2.26
9	trash)?	3.08	3.20	3.14	inorganic	2.88	4.00	4.00	3.26
8	What are	3.03	3.28	3.15	foot	2.82	1.00	4.00	3.25

				Avg of					Over
		Avg.	Avg.	ecol.					all
		of	of	and			Legal	Feasibili	vital
Rank of	Monitoring	ecol.	man.	man.	₹7°4-1	Relevancy	mandate	ty cost	sign
question	question status and	sig.	sig.	sig.	Vital sign trampling	score	score	score	score
	trends in				evidence				
	human				CVIGCIEC				
	impacts near								
	sensitive plant								
	and animal								
	populations						4		
	and habitats?								
	What are the								
	long term								
	trends in the				cover of			/	
	predominant				habitat				
11	habitat types?	3.18	2.89	3.04	types	3.15	1.00	4.00	3.25
	What are				<u> </u>				
	status and								
	trends in					7	7		
	structure,				4				
	function, and								
	composition				Second				
	of focal				growth				
2	communities?	3.44	3.14	3.29	forest	2.38	2.00	4.00	3.25
	How are			1					
	connectivity,								
	fragmentation,		4						
	and level of								
	park								
	"insularity"	4							
	changing with		4		11				
	land use				land use				
	change in and around the	4			(in and around				
10	parks?	3.20	3.00	3.10		2.94	3.00	4.00	3.25
10	What are	3.20	3.00	3.10	park)	2.94	3.00	4.00	3.23
	status and	P							
	trends in								
A	human								
	impacts near								
	sensitive plant								
	and animal								
7	populations				tide pool				
8	and habitats?	3.03	3.28	3.15	condition	2.76	2.00	4.00	3.24
	What are	_		-	-		•	-	
	status and								
	trends in focal				Native				
4	taxa groups?	3.38	3.15	3.26	grasses	2.41	2.00	4.00	3.24
	What are the				non-			_	
	trends in				native				
	distribution				vertebrate				
1	and	3.43	3.46	3.44	S	2.85	3.00	3.00	3.24

				A */~					
				Avg of					Over
		Avg.	Avg.	ecol.					all
		of	of	and			Legal	Feasibili	vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
	abundance of				Ü				
	non-native								
	species								
	through time?								
	What are								
	status and						4		
	trends in								
	pollutants								
	(chemicals,								
	nutrients,							30	
_	effluents, and				coliform		(
9	trash)?	3.08	3.20	3.14	bacteria	2.75	4.00	4.00	3.24
	How are								
	connectivity,								
	fragmentation,					1	1		
	and level of								
	park				4				
	"insularity"								
	changing with land use								
					The state of the s	/			
	change in and around the				road				
10	parks?	3.20	3.00	3.10	density	2.85	2.00	4.00	3.23
10	How are	3.20	3.00	3.10	density	2.03	2.00	4.00	3.23
	connectivity,			A 7					
	fragmentation,								
	and level of)III					
	park		450						
	"insularity"								
	changing with	1							
	land use								
	change in and								
	around the				landscape				
10	parks?	3.20	3.00	3.10	pattern	2.85	2.00	4.00	3.23
A	What are								
	status and								
	trends in focal	_	_	_					
4	taxa groups?	3.38	3.15	3.26	reptiles	2.34	2.00	4.00	3.23
	What are								
7	status and								
	trends in								
	structure,				early .				
	function, and				successio				
	composition				nal				
	of focal	2 4 4	214	2.20	communit	2.26	2.00	4.00	2.22
2	communities?	3.44	3.14	3.29	ies	2.26	2.00	4.00	3.23
	What are status and				dissolved				
9	trends in	3.08	3.20	3.14	dissolved	2.68	4.00	4.00	3.22
7	uenus III	2.00	3.20	ال.14	oxygen	2.00	4.00	4.00	3.44

				A					
				Avg of					Over
		Avg.	Avg.	ecol.					all
		of	of	and			Legal	Feasibili	vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
question	pollutants	sig.	sig.	315.	vitai sigii	SCOTE	Score	SCOTC	SCOLC
	(chemicals,								
	nutrients,								
	effluents, and								
	trash)?								
	What are							A .	
	status and						and a		
	trends in								
	pollutants						4		
	(e.g. ozone,							The same of the sa	
	N, S,							1	
12	particulates)?	3.17	2.66	2.91	pollutants	3.22	4.00	4.00	3.19
					human				
	What are the				disturban				
	status and				ce		·		
	trends in				dynamics	/ /	*		
	anthropogenic				-				
3	disturbance?	3.21	3.35	3.28	terrestrial	3.10	1.00	3.00	3.19
	What are								
	status and				The state of the s				
	trends in				,				
	pollutants			A					
	(chemicals,								
	nutrients,		4	A A					
9	effluents, and trash)?	3.08	3.20	3.14	turbidity	2.44	4.00	4.00	3.17
9	What are	3.08	3.20	3.14	turbiaity	2.44	4.00	4.00	3.17
	status and								
	trends in								
	pollutants				debris or				
	(chemicals,				oil on				
	nutrients,				seabirds				
	effluents, and				(carcasses				
9	trash)?	3.08	3.20	3.14)	2.36	4.00	4.00	3.16
	What are				special				-
	status and				botanical				
	trends in				areas (e.g.				
	structure,				Little				
	function, and				Bald				
7	composition				Hills,				
	of focal				Puccinelli				
2	communities?	3.44	3.14	3.29	a springs)	2.86	3.00	3.00	3.15
	What are				freshwate				
	status and				r				
	trends in focal				invertebra				
4	taxa groups?	3.38	3.15	3.26	tes	2.93	3.00	3.00	3.15
	What are the				vegetatio				
	long term	0.1-		2	n		4.00	4.05	2.1
11	trends in the	3.18	2.89	3.04	dynamics	2.61	1.00	4.00	3.14

Davida of	Manifestra	Avg.	Avg.	Avg of ecol. and		Dalaman	Legal	Feasibili	Over all vital
Rank of question	Monitoring question	ecol. sig.	man. sig.	man. sig.	Vital sign	Relevancy score	mandate score	ty cost score	sign score
question	predominant	sig.	sig.	sig.	vitai sigii	SCOLE	SCOLE	SCOLE	SCOLE
	habitat types?								
	What are the				human				
	status and				disturban				
	trends in				ce				
_	anthropogenic				dynamics				
3	disturbance?	3.21	3.35	3.28	-riverine	2.86	1.00	3.00	3.14
	What are						_ (T	Y	
	status and trends in								
	structure,							,	
	function, and								
	composition								
	of focal				kelp				
2	communities?	3.44	3.14	3.29	forest	2.81	1.00	3.00	3.14
	What are				sensitive				
	status and				birds (e.g.				
5	trends in focal	3.22	3.28	3.25	common	2.88	2.00	3.00	3.13
3	species? What are	3.22	3.28	3.23	murres)	2.88	2.00	3.00	3.13
	status and					/			
	trends in focal			(sensitive				
5	species?	3.22	3.28	3.25	plants	2.87	2.00	3.00	3.12
			4		human				
				\	disturban				
	What are the				ce				
	status and trends in	_	4		dynamics				
	anthropogenic				- subterran				
3	disturbance?	3.21	3.35	3.28	ean	2.71	3.00	3.00	3.11
	What are	3.21	2.33	3.20	Juii	2.71	2.00	3.00	5.11
	status and				sensitive				
	trends in focal				fish (e.g.				
5	species?	3.22	3.28	3.25	flat fish)	2.79	2.00	3.00	3.11
A	What are								
	status and				C1				
4	trends in focal	2 20	3.15	3.26	freshwate r mussels	2.72	4.00	3.00	3.10
4	taxa groups? What are the	3.38	3.13	3.20	1 mussers	2.73	4.00	3.00	3.10
	status and								
	trends in								
	natural				riverine				
	disturbance				disturban				
	events (e.g.				ce				
7	fire, floods)?	3.28	3.03	3.15	dynamics	3.03	1.00	3.00	3.10
	What are the				terrestrial				
	status and				disturban				
7	trends in natural	3.28	3.03	3.15	ce dynamics	3.03	1.00	3.00	3.10
/	natural	5.40	5.03	ال.ال	dynamics	5.05	1.00	5.00	5.10

				A					
				Avg of					Over
		A	A	ecol.					all
		Avg. of	Avg. of	and			Legal	Feasibili	an vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	_
question	disturbance	sig.	sig.	sig.	vitai sigii	SCOLE	SCOLE	SCOLE	score
	events (e.g.								
	fire, floods)?								
	What are								
	status and								
	trends in								
	structure,						4		
	function, and								
	composition						^ ~ ~		
	of focal				cave				
2	communities?	3.44	3.14	3.29	species	2.61	2.00	3.00	3.10
	What are	5.17	5.17	5.27	Брестев	2.01	2.00	5.00	5.10
	status and				sensitive	_			
	trends in focal				mammals				
5	species?	3.22	3.28	3.25	(e.g. pika)	2.73	2.00	3.00	3.10
	What are	0.22	0.20	0.20	(e.g. pii.u)		2.00	2.00	0.10
	status and				1	A 1			
	trends in focal								
4	taxa groups?	3.38	3.15	3.26	bats	2.66	2.00	3.00	3.09
	What are					_,_,			
	status and					/			
	trends in			4					
	pollutants)				
	(chemicals,		1						
	nutrients,		~						
	effluents, and				Chloroph				
9	trash)?	3.08	3.20	3.14	yll	2.00	4.00	4.00	3.09
			477		keystone				
	What are				marine				
	status and	,			species				
	trends in focal				(e.g. bull				
5	species?	3.22	3.28	3.25	kelp)	2.66	1.00	3.00	3.08
	What are	No.							
	status and				marine				
A	trends in focal				invertebra				
4	taxa groups?	3.38	3.15	3.26	tes	2.60	2.00	3.00	3.08
					ephemera				
	1				1 features				
	What are				(streams,				
y	status and				pools,				
	trends in				snow				
	surface	2.25	2.07	2.15	melt	2.00	2.00	2.00	2.07
6	waters?	3.26	3.07	3.16	beds)	2.88	3.00	3.00	3.07
	What are								
	status and				sensitive				
_	trends in focal	2.22	2.20	2.25	marine	2.61	2.00	2.00	2.07
5	species?	3.22	3.28	3.25	species	2.61	2.00	3.00	3.07
10	What are	2.17	2.55	2.01	acid	2.50	4.00	4.00	2.07
12	status and	3.17	2.66	2.91	depositio	2.58	4.00	4.00	3.07

Rank of	Monitoring	Avg. of ecol.	Avg. of man.	Avg of ecol. and man.		Relevancy	Legal mandate	Feasibili ty cost	Over all vital sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
•	trends in		-		n				
	pollutants								
	(e.g. ozone,								
	N, S,								
	particulates)?								
	What are							$A \lambda$	
	status and								
	trends in focal				marine				
4	taxa groups?	3.38	3.15	3.26	algae	2.53	2.00	3.00	3.06
	What are							JP .	
	status and								
	trends in								
	structure,								
	function, and				cave				
	composition				entrance				
	of focal				communit	/ 7			
2	communities?	3.44	3.14	3.29	у	2.44	2.00	3.00	3.06
	What are								
	status and								
	trends in				The state of the s				
	surface				7				
6	waters?	3.26	3.07	3.16	springs	2.80	4.00	3.00	3.06
	What are the								
	trends in		4		-				
	distribution								
	and								
	abundance of	A		, and the second					
	non-native	A .	~		non-				
1	species	2.42	2.46	2.44	native	2.04	2.00	2.00	2.05
1	through time?	3.43	3.46	3.44	diseases	2.94	3.00	2.00	3.05
	What are								
	status and								
	trends in pollutants	<i>F</i>							
	(chemicals,								
A	nutrients,								
	effluents, and				water				
9	trash)?	3.08	3.20	3.14	birds	1.80	2.00	4.00	3.05
9	How are	3.00	3.20	J.1 1	onus	1.00	2.00	7.00	5.05
	snowpack								
	dynamics								
	changing over				snowpack				
18	time?	3.03	2.31	2.67	duration	3.09	1.00	4.00	3.02
10	What are the	5.05	2.31	2.07	auranon	3.07	1.00	7.00	5.02
	trends in								
	distribution				non-				
	and				native				
	abundance of				invertebra				
1	non-native	3.43	3.46	3.44	tes	2.71	3.00	2.00	3.01

		Avg.	Avg.	Avg of ecol.					Over all
Rank of	Monitoring	of ecol.	of man.	and man.		Relevancy	Legal mandate	Feasibili ty cost	vital sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
	species through time?								
	How are								
	snowpack								
	dynamics				snowpack				
	changing over				spatial			A > .	
18	time?	3.03	2.31	2.67	extent	2.94	1.00	4.00	2.99
	What are								
	status and								
	trends in							No.	
	human								
	impacts near)		
	sensitive plant								
	and animal				cave				
0	populations	2.02	2.20	2.15	formation		2.00	2.00	2 00
8	and habitats?	3.03	3.28	3.15	S	2.48	3.00	3.00	2.99
					elevationa				
	Are climate				1				
	associated				vegetatio				
	ecotones				n boundarie	/			
	changing				s (e.g.				
14	through time?	3.13	2.28	2.70	treeline)	2.81	1.00	4.00	2.98
	Have rates,	0.10	2.23		area (2.01	1.00		2.70
	extent,								
	location, or								
	types of		A	P					
	erosional and		477						
	depositional								
	processes	. 4							
16	changed?	2.76	2.59	2.68	turbidity	2.85	4.00	4.00	2.98
	What are the								
	trends in	Jan 1							
	harvesting of				aommana:				
15	park resources?	2.49	2.87	2.68	commerci al fishing	2.84	3.00	4.00	2.97
13	What are	۷.47	2.07	2.00	ai iisiiiiig	2.04	3.00	+.00	<i>∠.</i> ヲ1
	status and								
	trends in								
7	human								
	impacts near								
	sensitive plant								
	and animal								
	populations				wildlife				
8	and habitats?	3.03	3.28	3.15	migration	2.40	2.00	3.00	2.97
	What are								
	status and								
4.2	trends in	2.1-	2	2 0 1	snowpack	205	4.00	2.00	2.05
12	pollutants	3.17	2.66	2.91	chemistry	2.85	4.00	3.00	2.92

				Avg					
				of					Over
		Avg.	Avg.	ecol.					all
		of	of	and			Legal	Feasibili	vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
	(e.g. ozone,								
	N, S,								
	particulates)?								
	Have rates,								
	extent,								
	location, or						A		
	types of erosional and								
	depositional							N Y	
	processes				bank				
16	changed?	2.76	2.59	2.68	erosion	2.54	1.00	4.00	2.91
- 10	What are the	2.70	2.07	2.00	Grosson	2.0 .	1.00		
	trends in								
	diseases or								
	parasites								
	(including					7	7		
	forest insects)				plant				
17	through time?	2.92	2.42	2.67	mortality	2.50	1.00	4.00	2.90
	What are the				human				
	status and				disturban				
	trends in				ce				
3	anthropogenic disturbance?	2 21	2.25	3.28	dynamics	2.64	1.00	2.00	2.90
	disturbance?	3.21	3.35	3.28	-marine human	2.04	1.00	2.00	2.90
	What are the		4	A T	disturban				
	status and				ce				
	trends in)	dynamics				
	anthropogenic		4		-				
3	disturbance?	3.21	3.35	3.28	lacustrine	2.64	1.00	2.00	2.90
	What are								
	status and				Bryophyt				
	trends in focal				es and				
4	taxa groups?	3.38	3.15	3.26	lichens	2.64	1.00	2.00	2.89
	What are								
A	status and								
1	trends in focal	2 20	2 15	2.26	imaaata	2.62	2.00	2.00	200
4	taxa groups? What are	3.38	3.15	3.26	insects	2.63	2.00	2.00	2.88
	status and								
>	trends in								
	pollutants								
	(e.g. ozone,				amphibia				
	N, S,				ns (tissue				
12	particulates)?	3.17	2.66	2.91	sampling)	2.65	3.00	3.00	2.88
	How is woody								
	debris								
	production				riparian				
22	and storage	0.55	2.21	2.15	woody	2.00	4.00	4.00	2.00
22	changing over	2.62	2.31	2.46	debris	3.00	1.00	4.00	2.88

Rank of question	Monitoring question time?	Avg. of ecol. sig.	Avg. of man. sig.	Avg of ecol. and man. sig.	Vital sign	Relevancy score	Legal mandate score	Feasibili ty cost score	Over all vital sign score
15	What are the trends in harvesting of park resources?	2.49	2.87	2.68	populatio ns prone to poaching (e.g. Roosevelt elk)	2.30	3.00	4.00	2.87
12	What are status and trends in pollutants (e.g. ozone, N, S, particulates)?	3.17	2.66	2.91	lichens	2.53	3.00	3.00	2.85
12	How is woody debris production and storage changing over	3.17	2.00	2.91	terrestrial woody	2.33	3.00	3.00	2.83
22	time? What are status and	2.62	2.31	2.46	debris rare birds (e.g.	2.86	1.00	4.00	2.85
5	trends in focal species?	3.22	3.28	3.25	brown pelican)	2.48	4.00	2.00	2.85
	What are status and trends in focal	3.22	3.28	3.25	rare mammals (e.g. stellar's	2.49	4.00		2.85
5	what are status and trends in focal species?	3.22	3.28	3.25	sea lion) rare fish (e.g. salmonids)	2.48	4.00	2.00	2.85
20	What is timing and duration of key climate- related phenological			2.50	hud besst	2.69	0.00	4.00	
	events? What are status and trends in focal	2.95	2.05		bud break rare				2.84
5	species?	3.22	3.28	3.25	plants	2.37	4.00	2.00	2.82
20	What is timing and duration of key climate-	2.95	2.05	2.50	flowering	2.61	1.00	4.00	2.82

				Ava					
				Avg of					Over
		Avg.	Avg.	ecol.					all
		of	of	and			Legal	Feasibili	vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
question	related	2.8		~-8*	V 10001 101B11	50010	50010	50010	50010
	phenological								
	events?								
	What are								
	status and								
	trends in							$A \lambda$.	
	pollutants				aquatic				
	(e.g. ozone,				species		. (1		
	N, S,				compositi				
12	particulates)?	3.17	2.66	2.91	on	2.34	2.00	3.00	2.82
	What are								
	status and								
	trends in								
	human								
	impacts near						/		
	sensitive plant				threatene				
	and animal				d and				
	populations	2.02	2.20	2.15	endangere		4.00	2.00	2.01
8	and habitats?	3.03	3.28	3.15	d species	2.61	4.00	2.00	2.81
	What are status and				The state of the s	/			
	trends in								
	human								
	impacts near		A						
	sensitive plant		4	¥ 4					
	and animal				water				
	populations			7	craft				
8	and habitats?	3.03	3.28	3.15	traffic	2.58	1.00	2.00	2.81
	What are								
	status and	, 1			rare				
	trends in focal	A 7			marine				
5	species?	3.22	3.28	3.25	species	2.26	4.00	2.00	2.80
	What are								
	status and								
A	trends in								
	pollutants								
	(e.g. ozone,				pollution				
	N, S,				sensitive				
12	particulates)?	3.17	2.66	2.91	trees	2.19	2.00	3.00	2.79
<i>y</i>	How are								
	snowpack								
	dynamics				1				
10	changing over	2.02	2 21	2.67	snowpack	2.01	1.00	2.00	2.70
18	time? What are the	3.03	2.31	2.67	depth	2.91	1.00	3.00	2.78
	status and				subterran				
	trends in				ean disturban				
	natural				ce				
7	disturbance	3.28	3.03	3.15	dynamics	2.38	3.00	2.00	2.77
/	distuivance	5.40	2.03	ال.13	aynamics	4.50	5.00	2.00	2.11

				Avg of					Over
		Avg.	Avg.	ecol.			T 1	T	all
Rank of	Monitoring	of ecol.	of man.	and man.		Relevancy	Legal mandate	Feasibili ty cost	vital sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
	events (e.g.	Ö	Ü)	J				
	fire, floods)?								
	How is woody								
	debris							4	
	production				intertidal				
	and storage				woody debris				
22	changing over time?	2.62	2.31	2.46	(beach)	2.37	1.00	4.00	2.75
	What are	2.02	2.31	2.40	(beacii)	2.37	1.00	4.00	2.13
	status and								
	trends in							/	
	human								
	impacts near								
	sensitive plant								
	and animal						·		
0	populations	2.02	2.20	2.15	sea bird		2.00	2.00	2.75
8	and habitats? What are the	3.03	3.28	3.15	behavior	2.31	2.00	2.00	2.75
	status and								
	trends in				lacustrine				
	natural				(lake)	1			
	disturbance				disturban				
	events (e.g.				ce				
7	fire, floods)?	3.28	3.03	3.15	dynamic	2.29	1.00	2.00	2.75
	What are		. 4	N. J					
	status and								
	trends in	_			marine				
	pollutants	A .	<u> </u>		mammals with oil				
	(chemicals, nutrients,				or				
	effluents, and				attached				
9	trash)?	3.08	3.20	3.14	debris	2.29	4.00	2.00	2.74
	What are								
	status and								
A	trends in								
	human								
	impacts near								
	sensitive plant				monis-				
	and animal populations				marine mammal				
8	and habitats?	3.03	3.28	3.15	behavior	2.22	2.00	2.00	2.73
	What are the	2.02	5.20	5.15	JUIN 101	2.22	2.00	2.00	2.73
	status and								
	trends in								
	natural				marine				
	disturbance				disturban				
	events (e.g.				ce				
7	fire, floods)?	3.28	3.03	3.15	dynamics	2.16	1.00	2.00	2.72
16	Have rates,	2.76	2.59	2.68	gully	2.59	1.00	3.00	2.72

				Avg					
				of					Over
		Avg.	Avg.	ecol.					all
		of	of	and			Legal	Feasibili	vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
1	extent,				formation				
	location, or								
	types of								
	erosional and								
	depositional								
	processes							$\langle A \rangle$	
	changed?								
	How is sea								
	level and								
	ocean				Sea level		1	y	
	temperature				(max &		>		
21	changing?	3.00	2.00	2.50	min tides)	3.00	1.00	3.00	2.70
	Are climate								
	associated				14				
	ecotones				intertidal		1		
1.4	changing	3.13	2.20	2.70	boundarie	2.20	2.00	2.00	2.70
14	through time? How is sea	3.13	2.28	2.70	S	2.38	2.00	3.00	2.70
	level and								
	ocean				ocean				
	temperature				temperatu	/			
21	changing?	3.00	2.00	2.50	res	2.88	1.00	3.00	2.68
21	How is cave	3.00	2.00	2.50	105	2.00	1.00	3.00	2.00
	air flow		1						
	(quantity and								
	quality)								
	changing			y	air flow				
19	through time?	2.60	2.48	2.54	in caves	2.76	1.00	3.00	2.68
					commerci				
		,			al				
	What are the		7		gathering				
	trends in				(e.g.				
	harvesting of	F			edible				
	park	2.12	2.0-	2	mushroo	2.22	2.00	2.00	2 - 5
15	resources?	2.49	2.87	2.68	ms)	2.23	3.00	3.00	2.65
	How is sea								
	level and								
	ocean temperature				intertidal				
21	changing?	3.00	2.00	2.50	zonation	2.62	1.00	3.00	2.62
21	changing:	3.00	2.00	2.30	freshwate	2.02	1.00	3.00	2.02
	Are climate				r				
	associated				vegetatio				
	ecotones				n				
	changing				boundarie				
14	through time?	3.13	2.28	2.70	S	2.00	1.00	3.00	2.62
	What are the				nest				
	trends in				parasites				
17	diseases or	2.92	2.42	2.67	(cowbirds	2.07	1.00	3.00	2.62

				Avg					
				of					Over
		Avg.	Avg.	ecol.					all
		of	of	and			Legal	Feasibili	vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
	parasites)				
	(including								
	forest insects)								
	through time?								
	What are				air				
20	status and	2.61	1 77	2.10	temperatu	2.46	1.00	100	2.61
28	trends in fog?	2.61	1.77	2.19	re	2.46	1.00	4.00	2.61
	Are climate				estuarine		_	7	
	associated				vegetatio				
	ecotones				n houndonio			,	
14	changing through time?	3.13	2.28	2.70	boundarie	1.93	1.00	3.00	2.61
14	What are	5.13	2.20	2.70	s aquifers	1.93	1.00	3.00	۷.01
	status and				(depth,				
	trends in				volume,	4			
	ground				variability		*		
13	waters?	2.74	2.70	2.72) A	2.77	2.00	2.00	2.59
13	What are	2.74	2.70	2.12	,	2.77	2.00	2.00	2.37
	status and				groundwa				
	trends in				ter				
	ground				contamin	1			
13	waters?	2.74	2.70	2.72	ants	2.76	4.00	2.00	2.58
	What are								
	status and		4		cave				
	trends in				water				
	subterranean				contamin				
26	water and ice?	2.43	2.29	2.36	ants	2.69	4.00	3.00	2.55
	What are		427						
	status and								
	trends in focal	. 4	-		mycorhhi				
4	taxa groups?	3.38	3.15	3.26	zae	1.92	2.00	1.00	2.54
	What are								
	status and	F			_				
	trends in				groundwa				
10	ground	274	2.70	2.72	ter	2.52	4.00	2.00	2.54
13	waters?	2.74	2.70	2.72	chemistry	2.52	4.00	2.00	2.54
	What are								
	status and				aava				
	trends in				cave				
26	subterranean water and ice?	2.43	2.29	2.36	water chemistry	2.59	4.00	3.00	2.53
20	What are	2.43	2.29	2.30	chemistry	2.39	4.00	3.00	2.33
	status and								
	trends in								
29	visibility?	1.89	2.16	2.03	visibility	2.58	4.00	4.00	2.53
23	What are	1.07	2.10	2.03	cave	2.30	7.00	7.00	2.33
	status and				water				
	trends in				temperatu				
26	subterranean	2.43	2.29	2.36	re	2.56	4.00	3.00	2.53
20	Sacrandin	2.13	/	2.50	1	2.50	1.00	2.00	2.55

Rank of	Monitoring	Avg. of ecol.	Avg. of man.	Avg of ecol. and man.		Relevancy	Legal mandate	Feasibili ty cost	Over all vital sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
	water and ice?		Ü						
	What are								
	status and								
	trends in				cave				
	subterranean				water				
26	water and ice?	2.43	2.29	2.36	flow	2.50	1.00	3.00	2.52
	What are								
	status and								
	trends in								
	ground				hyporheic		1	JP .	
13	waters?	2.74	2.70	2.72	zones	2.41	1.00	2.00	2.51
	What are								
	status and								
	trends in				_				
	subterranean				cave ice		/		
26	water and ice?	2.43	2.29	2.36	dynamics	2.47	3.00	3.00	2.51
	How are								
	ocean and								
	nearshore				G 1				
	processes				Sea level	,			
2.4	changing	2.77	2.00	2.20	(max &	2.22	1.00	2.00	0.47
24	through time?	2.77	2.00	2.38	min tides)	2.22	1.00	3.00	2.47
	What are the		1						
	trends in		4	A 7					
	diseases or				diseased				
	parasites				marine				
	(including forest insects)	_	4		invertebra				
17	through time?	2.92	2.42	2.67	tes	2.26	2.00	2.00	2.45
1 /	Have rates,	2.92	2.42	2.07	ies	2.20	2.00	2.00	2.43
	extent,								
	location, or								
	types of								
	erosional and								
A	depositional								
A	processes				sheet				
16	changed?	2.76	2.59	2.68	erosion	2.19	1.00	2.00	2.44
	How is cave	2.70	2.07	2.00	21001011	2.17	1.00	2.00	2.17
	air flow								
	(quantity and				cave				
	quality)				species				
	changing				compositi				
19	through time?	2.60	2.48	2.54	on	2.53	2.00	2.00	2.43
	What are the				-				
	trends in								
	harvesting of								
	park				commerci				
15	resources?	2.49	2.87	2.68	al hunting	2.10	3.00	2.00	2.43
20	What is	2.95	2.05	2.50	bird	2.63	1.00	2.00	2.43

				A					
				Avg of					Over
		Ava	Avg.	ecol.					all
		Avg. of	of	and			Legal	Feasibili	vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
question	timing and	sig.	sig.	515.	breeding	Score	Score	Score	SCOTE
	duration of				orceams				
	key climate-								
	related								
	phenological								
	events?							A A .	
	How are								
	ocean and								
	nearshore								
	processes							7	
	changing								
24	through time?	2.77	2.00	2.38	waves	1.95	0.00	3.00	2.42
	What is								
	timing and								
	duration of						/		
	key climate-								
	related				invertebra				
	phenological				te				
20	events?	2.95	2.05	2.50	hatching	2.50	1.00	2.00	2.40
	What are				The state of the s				
	status and			A STATE OF THE STA	7				
2.2	trends in	2	2.20	2 42	soil	0.45	1.00	2 00	2.20
23	soils?	2.65	2.20	2.42	carbon	2.67	1.00	2.00	2.39
	How is cave		4						
	air flow								
	(quantity and				mineral dissolutio				
	quality) changing	_			n and				
19	through time?	2.60	2.48	2.54	accretion	2.28	2.00	2.00	2.38
19	What are the	2.00	2.40	2.34	accietion	2.26	2.00	2.00	2.36
	trends in								
	diseases or								
	parasites								
	(including	,							
	forest insects)				animal				
17	through time?	2.92	2.42	2.67	carcasses	1.87	0.00	2.00	2.38
	What are the						2.23		
	trends in								
	diseases or								
7	parasites								
	(including				marine				
	forest insects)				mammal				
17	through time?	2.92	2.42	2.67	behavior	1.83	1.00	2.00	2.37
	What are								
	status and				soil				
	trends in				compacti				
23	soils?	2.65	2.20	2.42	on	2.52	1.00	2.00	2.36
	What are				Redwood				
28	status and	2.61	1.77	2.19	growth	2.21	3.00	3.00	2.36

Rank of	Monitoring	Avg. of ecol.	Avg. of man.	Avg of ecol. and man.	**************************************	Relevancy	Legal mandate	Feasibili ty cost	Over all vital sign
question	question trends in fog?	sig.	sig.	sig.	and metabolis m	score	score	score	score
27	What are the status and trends of biotoxin accumulation?	2.57	2.10	2.34	biotoxin accumulat ion in predators	2.77	1.00	2.00	2.35
28	What are status and trends in fog?	2.61	1.77	2.19	ocean temperatu res	2.16	4.00	3.00	2.35
23	What are status and trends in soils?	2.65	2.20	2.42	soil fertility	2.36	1.00	2.00	2.33
	What are status and trends in				topsoil	\bigcirc			
23	How are ocean and nearshore processes changing	2.65	2.20	2.42	coastal morpholo gy	2.30	1.00	2.00	2.31
24	through time? What are the trends in	2.77	2.00	2.38	changes pollinator compositi	2.42	1.00	2.00	2.31
25	what are the trends in	2.75	2.00	2.38	on pollinator abundanc	2.41	2.00	2.00	2.31
25	what are status and trends in subterranean			2.38	cave aquatic species compositi	2.36	2.00	2.00	2.30
26	water and ice? What are status and trends in	2.43	2.29	2.36	on light at	2.33	2.00	2.00	2.28
29	visibility? What are status and trends in	1.89	2.16	2.03	night sheet	2.26	1.00	3.00	2.27
23	what are status and trends in fog?	2.65	2.20 1.77	2.42	fog dynamics and distributio n	2.48	1.00	2.00	2.23

				Avg					
				of					Over
		Avg.	Avg.	ecol.					all
		of	of	and			Legal	Feasibili	vital
Rank of	Monitoring	ecol.	man.	man.		Relevancy	mandate	ty cost	sign
question	question	sig.	sig.	sig.	Vital sign	score	score	score	score
90000000	What are	~-8-	~-8-					20020	
	status and								
	trends in								
23	soils?	2.65	2.20	2.42	soil biota	2.57	1.00	1.00	2.17
	What are								
	changes in				biological			4 A.	
	extent of soil				soil crust				
30	crust?	2.19	1.84	2.02	extent	2.70	1.00	2.00	2.15
	What are the								
	status and							7	
	trends in							·	
	subterrannean								
	geologic				seismic				
31	processes?	1.95	1.80	1.88	activity	2.07	1.00	3.00	2.14
	What is the						J		
	effusion rate				geotherm	7			
	of geothermal				al 🔏				
	groundwater				groundwa				
	into the				ter				
	surface				temperatu				
33	environment?	1.55	1.32	1.43	re	2.13	3.00	4.00	2.09
	How are								
	ocean and								
	nearshore		A						
	processes		. 4						
	changing				nearshore				
24	through time?	2.77	2.00	2.38	currents	2.09	1.00	1.00	2.05
	What are the		477						
	status and								
	trends in	. 4							
	subterrannean		7		sediment				
	geologic				movemen				
31	processes?	1.95	1.80	1.88	t	2.57	1.00	2.00	2.04
	What are the								
A	status and								
	trends in				mineral				
	subterrannean				dissolutio				
	geologic				n and				
31	processes?	1.95	1.80	1.88	accretion	2.43	3.00	2.00	2.01
<i>y</i>	What is the								
	effusion rate				_				
	of geothermal				geotherm				
	groundwater				al				
	into the				groundwa				
22	surface	1.55	1.00	1 40	ter	1.75	2.00	4.00	2.01
33	environment?	1.55	1.32	1.43	chemistry	1.75	3.00	4.00	2.01
	What are the				coastal				
22	status and	2.00	1.54	1.77	morpholo	2.45	1.00	2.00	1.05
32	trends in	2.00	1.54	1.77	gy	2.45	1.00	2.00	1.95

Rank of question	Monitoring question	Avg. of ecol. sig.	Avg. of man. sig.	Avg of ecol. and man. sig.	Vital sign	Relevancy score	Legal mandate score	Feasibili ty cost score	Over all vital sign score
question	marine	sig.	sig.	sig.	changes	score	score	score	score
	geologic processes?				changes				
	What is the effusion rate of geothermal groundwater into the surface	1.55	1.00	1 10	geotherm al groundwa	2.20			1.02
33	environment? What are the status and trends in	1.55	1.32	1.43	ter flow	2.38	3.00	3.00	1.93
	subterrannean				fracture				
31	geologic processes?	1.95	1.80	1.88	and collapse	2.00	3.00	1.00	1.73
31	What are the status and trends in subterrannean	1.55	1.00	1.00		2.0	3.00	1.00	1.73
21	geologic	1.05	1.00	1.00	weatherin	2.00	1.00	1.00	1.72
31	what are the status and trends in marine geologic	1.95	1.80	1.88	g	2.00	1.00	1.00	1.73
32	processes?	2.00	1.54	1.77	dynamics	2.16	1.00	1.00	1.69